Remarks

Applicant respectfully requests reconsideration of the rejection of the claims in view of the remarks set forth below. Claims 1-8 and 17-20 remain in the application. Claims 9-16 were previously canceled. Claims 1-8 and 17-19 were previously presented. Claim 20 remains unchanged.

35 U.S.C. §103

Claims 1-8 and 17-20 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Van de Kerkhof (US 5,995,493) in view of Barnette et al. (US Pub. 2006/0023821). Under U.S.C. § 103, the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references (MPEP § 706.02(j)). Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. However, the proposed modification cannot render the prior art unsatisfactory for its intended purpose (MPEP § 2143.01).

Claim 1 recites a "digital radio frequency (RF) circuit that creates a signal in a desired range in a frequency spectrum, comprising... circuitry that produces a first sample data modulated signal having a first frequency and a first sample data clock rate... an up-sampler modulator that receives the first sample data modulated signal and produces a second sample data modulated signal having a second frequency and a second sample data clock rate... and circuitry that receives the first sample data modulated signal and the second sample data modulated signal and ***delivers one of the first sample data modulated signal and the second sample data modulated signal for further processing*** depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment." (Emphasis added).

The "circuitry that receives the first sample data modulated signal and the second sample data modulated signal and ***delivers one of the first sample data modulated signal and the second sample data modulated signal for further processing*** depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment" element of claim 1 is an important aspect of Applicant's claimed invention. As discussed on page 6, lines 21-29 of Applicant's application:

> The use of two clock modes in accordance with the present invention may result in a number of advantages. One advantage is that power consumption savings may be obtained by using the lower clock rate circuitry without the need to replicate circuitry. Another advantage is that EMI emissions are different for the two modes of operation. This gives system designers flexibility to choose whichever mode of operation is most compatible with a desired EMI profile. A third advantage is that dynamic range (analog resolution) of the inchannel IF signal for the low clock rate mode is the same as the dynamic range of the inchannel IF signal for the high clock rate mode, even though the signal levels are different.

In other words, the present invention permits a system designer to have flexibility in adjusting the characteristics (e.g., power consumption, EMI emission profile, etc.) of a digital RF circuit when the RF circuit contains the "circuitry that receives the first sample data modulated signal and the second sample data modulated signal *and delivers one of the first sample data modulated signal and the second sample data modulated signal for further processing depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment*" (emphasis added) element of claim 1.

Van de Kerkhof appears to be directed towards providing an extension to the format of a transmission signal such that a digital signal is transmitted having both a lowpass filtered and downsampled component having a sampling frequency f_{s2} and a high frequency component having a sampling frequency f_{s1}. (Col. 1, lines 24-29; col. 4, lines 27-30, 40-42, and 62-67; and FIG. 1). Using the transmission signal of Van de Kerkhof, legacy receivers recover the digital signal by only retrieving and processing the lowpass filtered and downsampled component of the transmitted signal (FIG 3; col. 2, lines 20-25; col. 3, line 66 to col. 6, line 7) while Van de Kerkhof-based receivers recover the digital signal by retrieving and processing both the lowpass filtered and downsampled component and the high frequency component of the transmitted signal (Fig. 2; col. 5, lines 29-65). As a result, Van de Kerkhof appears to teach the

transmitting or further processing of a signal having both a first signal component having a sampling frequency f_{s1} and a second downsampled signal component having sampling frequency f_{s2}. Indeed, as noted on page 3 of the April 1, 2009 office action, "Van de Kerkhof however, does not explicitly disclose circuitry that receives the first and second modulated signal delivers one of the modulated signal and the second modulated signal depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment." It is not surprising that "Van de Kerkhof...does not explicitly disclose circuitry that delivers one of the modulated signal and the second modulated signal" since the intended purpose of Van de Kerkhof is to transmit a signal having both a first signal component (with a sampling frequency f_{s1}) and a second signal downsampled signal component (with a sampling frequency f_{s2}) such that prior art or legacy receivers as well as Van de Kerkhof-based receivers can receive and process the transmitted signal.

The office action proposes that Barnette discloses the element missing in Van de Kerkhof. Applicant respectfully disagrees.

First, Barnette appears to be directed towards a transceiver having a reduced complexity resampler (page 2, paragraph 19). More specifically, the receiver includes a bit pump having an ADC that generates three single-bit streams (page 6, paragraph 58). The three single-bit streams are passed to a resampler that merges the three-bit outputs into a single output (page 6, paragraph 59 and page 8, paragraph 75). The resampler has delay, interpolation and selection stages 402, 405, 410 and filters 415 that process the three single bit streams before a combing stage 420 combines the processed three single-bit streams into a resampled output signal (Fig. 4; page 8, paragraphs 75 to 80). The office action appears to suggest that the selection stage 410 selects one of the three single-bit streams to output. This does not appear to be the case. The interpolation stage 405 generates interpolation samples for each one-bit input signal in each single-bit stream and the selection stage 410 selects one of the intermediate samples to provide as an output sample for each single-bit stream (page 8, paragraph 78). After filtering the combing stage 420 combines the three single-bit streams from the selection stage into a single

resampled output signal (page 8, paragraph 80). As a result, Barnette fails to teach or suggest the "circuitry that receives the first sample data modulated signal and the second sample data modulated signal *and delivers one of the first sample data modulated signal and the second sample data modulated signal for further processing depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment*" element of claim 1.

Second, even if Barnette could properly be interpreted as suggested by the office action, the proposed modification of Van de Kerkhof would render a Van De Kerkhof transmitter unsatisfactory for its intended purpose. As discussed above, the intended purpose of the Van de Kerkhof transmitter is to transmit a signal having both a first signal component (with a sampling frequency f_{s1}) and a second downsampled signal component (with a sampling frequency f_{s2}) such that prior art or legacy receivers as well as Van de Kerkhof-based receivers can receive and process the transmitted signal. If, for example, the Van de Kerkhof transmitter was modified to deliver a transmitted signal only having the first signal component (with a sampling frequency f_{s1}), then prior art legacy receivers would not be able to receive and process the transmitted signal since prior art legacy receivers require the transmitted signal to include the second signal component (with a sampling frequency f_{s2}) in order to operate. As a result, since modifying Van de Kerkhof as suggested by the office action would render Van de Kerkhof unsatisfactory for its intended purpose then, pursuant to MPEP § 2143.01, there is no suggestion or motivation to make the proposed modification of Van de Kerkhof based on the office action's interpretation of Barnette.

As a result, Applicants respectfully propose that both Van de Kerkhof and Barnette fail to suggest the "circuitry that receives the first sample data modulated signal and the second sample data modulated signal *and delivers one of the first sample data modulated signal and the second sample data modulated signal for further processing depending on which sample data modulated signal exhibits desirable characteristics for a given operating environment*" element of claim 1 and, alternatively, that there is no suggestion or motivation to modify Van de

Kerkhof based on the office action's interpretation of Barnette. Therefore, it is respectfully proposed that the rejection of claim 1 under 35 U.S.C. § 103(a) is overcome in accordance with the above remarks and notice to that effect is earnestly solicited.

Dependent claims 2-8 being dependent on and further limiting independent claim 1, should be allowable for that reason, as well as for the additional recitations that they contain. Applicant respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

Independent claim 17 contains elements similar to independent claim 1 and should be allowable for the reasons discussed above. Therefore, it is respectfully proposed that the rejection for obviousness is overcome.

Dependent claims 18-20 being dependent on and further limiting independent claim 17, should be allowable for that reason, as well as for the additional recitations that they contain. Applicant respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the Applicants' attorney at (818) 480-5223, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fees, other than those discussed above, are believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,

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September 15, 2009

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on:

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Vincent E. Duffy

Report to Data Base — PATENT OPERATIONS — MAILING TO U.S. Patent and Trademark Office

Docket No PU030265 Serial No. 10/572,695 Filed: 3/21/06 Patent No. ____

Inventor(s): David Lowell McNeely Atty: Vincent E. Duffy

Title: Digital RF Transceiver with Multiple Imaging Modes

APPLICATION AS FILED									
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		Independent Claims		Original-US Nat'l	☐	Declaration			
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